

WHAT IS CLAIMED IS:

1. (Previously Claim 64) A digital imaging machine for generating a multicolor ink-jet-ink-derived material image, said digital imaging machine including a plurality of modules arranged sequentially, each module respectively comprising:
 - an ink jet device for imagewise jetting, on to an operational surface of an intermediate member, droplets of an ink made of particles dispersed in a carrier liquid, said ink jet device thereby forming on said operational surface of said intermediate member a primary image, said primary image including said particles and said carrier fluid;
 - a plurality of process zones associated with said operational surface of said intermediate member, said plurality of process zones located sequentially in proximity with said operational surface, said plurality of process zones including an image concentrating process zone, an excess liquid removal process zone, and a transfer process zone;
 - a mechanism for concentrating in said image concentrating process zone said respective particles of said primary image so as to form on said operational surface a concentrated image from said primary image, said mechanism for concentrating said particles causing said particles to become concentrated adjacent said operational surface;
 - a mechanism for removing in said excess liquid removal process zone a portion of said respective carrier liquid from said concentrated image so as to form on said operational surface a liquid-depleted image;
 - a transport by which a receiver is moved sequentially through said each module;
 - a mechanism for transferring to said receiver, from said operational surface in said transfer process zone, said respective liquid-depleted image;

a mechanism for forming on each said operational surface a regenerated operational surface for a subsequent formation thereon, by said ink jet device, of a new primary image, said regeneration process zone associated in proximity with said intermediate member at a location between said transfer
5 process zone and said ink jet device;

wherein said intermediate member includes one of a rotatable member or a linearly-movable member;

wherein said primary image includes a plurality of smallest resolved imaging areas and each of said plurality of smallest resolved imaging
10 areas receives from said ink jet device a preselected number of droplets of said ink, said preselected number including zero;

wherein said primary image, formed on said operational surface of said intermediate member, is formed as one of a continuous tone primary image or a half-tone primary image; and

15 wherein a color ink-jet-ink-derived material image is successively transferred in registry to said receiver in each of said modules included in said plurality of modules, thereby creating said ink-jet-ink-derived material multicolor image on said receiver.

20 2. (Previously Claim 65) A digital imaging machine according to Claim 1, wherein a receiver which is moved sequentially through said each module is adhered to a moving transport belt, which transport belt is included in a plurality of transfer nips for transfer of each said liquid-depleted image to said receiver, each said plurality of transfer nips being respectively
25 included in a transfer process zone, each said intermediate member having the form of a roller engaged with a backup roller to respectively form each of said plurality of transfer nips.

3. (Previously Claim 66) A digital imaging machine according to Claim 1, wherein said image concentrating process zone and said excess liquid removal process zone are one process zone, said one process zone being an image concentration/liquid removal zone wherein said primary image is concentrated and a portion of an excess liquid removed substantially simultaneously so as to form a liquid-depleted image.

4. (Previously Claim 67) A digital imaging machine according to Claim 1, wherein a receiver which is moved sequentially through said each module is adhered to a receiver-transporting roller, which receiver-transporting roller is included in a plurality of transfer nips for transfer of each said liquid-depleted image to said receiver, each of said plurality of transfer nips being included in a transfer process zone.

5. (Previously Claim 68) A digital imaging machine according to Claim 4, wherein said image concentrating process zone and said excess liquid removal process zone are one process zone, said one process zone being an image concentration/liquid removal zone wherein said primary image is concentrated and a portion of an excess liquid removed substantially simultaneously so as to form said liquid-depleted image.

6. (Previously Claim 69) A digital imaging machine for generating a multicolor ink-jet-ink-derived material image, said digital imaging machine including a plurality of modules arranged sequentially, each module respectively comprising:
an ink jet device for imagewise jetting, on to an operational surface of an intermediate member, preselected numbers of droplets of an ink made of particles dispersed in a carrier liquid, said ink jet device thereby forming on said operational surface of said intermediate member a primary image, said primary image including said particles and said carrier fluid;

a plurality of process zones associated with said operational surface of said intermediate member, said plurality of process zones located sequentially in proximity with said operational surface, said plurality of process zones including an image concentrating process zone, an excess liquid removal process zone, and a transfer process zone;

5 a mechanism for concentrating in said image concentrating process zone said particles of said primary image so as to form a concentrated image on said operational surface from said primary image, said mechanism for concentrating said particles causing said particles to become concentrated adjacent said operational surface;

a mechanism for removing in said excess liquid removal process zone a portion of said carrier liquid from said concentrated image so as to form on said operational surface a liquid-depleted image;

15 a common member which is moved sequentially through said each module;

a mechanism for transferring to said common member, from said operational surface in said transfer process zone, said liquid-depleted image such that a color ink-jet-ink-derived material image is successively transferred in registry to said common member in each of said modules included in said plurality of modules, thereby forming a plural image on said common member;

20 in a regeneration process zone a mechanism for forming on each said operational surface a regenerated operational surface for a subsequent formation thereon, by said ink jet device, of a new primary image, said regeneration process zone associated in proximity with said intermediate member at a location between said transfer process zone and said ink jet device;

25 in a plural image pressure transfer nip including said common member, said plural image is transferred by a plural image transfer mechanism to a receiver transported through said plural image pressure transfer nip, thereby creating said ink-jet-ink-derived material multicolor image on said receiver;

wherein said primary image includes a plurality of smallest resolved imaging areas and each of said plurality of smallest resolved imaging areas receives from said ink jet device a preselected number of droplets of said ink, said preselected number including zero;

5 wherein said common member includes one of a rotatable member or a linearly-movable member;

 wherein said intermediate member includes one of a rotatable member or a linearly-movable member; and

 wherein said primary image, formed on said operational surface of
10 said intermediate member, is respectively formed as one of a continuous tone primary image or a half-tone primary image.

7. (Previously Claim 70) A digital imaging machine according to Claim 6, wherein said image concentrating process zone and said
15 excess liquid removal process zone are one process zone, said one process zone being an image concentration/liquid removal zone wherein said primary image is concentrated and a portion of an excess liquid removed substantially simultaneously so as to form said liquid-depleted image.

20 8. (Previously Claim 71) In a digital imaging apparatus having a plurality of tandemly arranged image forming modules, wherein a plurality of ink-jet-ink-derived images are sequentially made in said plurality of image forming modules for successive transfers in register to a receiver member so as to form a completed plural image on said receiver member, and wherein each
25 image forming module includes an intermediate member on which an ink-jet-ink-derived image is formed on an operational surface, a method of forming said completed plural image comprising the steps of:

 on said operational surface of said intermediate members, a step of forming a primary image by depositing from an ink jet device droplets of an ink
30 made from a dispersion of particles in a carrier liquid;

causing a portion of said carrier liquid from said primary images to be removed so as to form a liquid-depleted image;

transferring said respective liquid-depleted images to said receiver member, said transferring done in registry superposed on liquid-depleted images previously transferred to said receiver member;

in a last of said modules of said plurality of image forming modules, transferring a last liquid-depleted image to said receiver member so as to form on said receiver member said completed plural image; and

prior to said step of forming primary images, regenerating said operational surfaces of respective intermediate members to prepare said operational surfaces for receiving a new primary image from said ink jet device.

9. (Previously Claim 72) In a digital imaging apparatus having a plurality of tandemly arranged image forming modules, wherein a plurality of ink-jet-ink-derived images are sequentially made in said plurality of image forming modules for sequential transfers in register of said ink-jet-ink-derived images to a common member so as to form a plural image on said common member, said plural image for transfer to a receiver member from said common member, and wherein each of said image forming modules includes an intermediate member on which said intermediate member an ink-jet-ink-derived image is formed on an operational surface, a method of making said completed plural image comprising the steps of:

on said operational surface of said intermediate members, forming a primary image by depositing from an ink jet device droplets of a ink made from a dispersion of particles in a carrier liquid;

causing a portion of said carrier liquid from said primary images to be removed so as to form a liquid-depleted image;

transferring said liquid-depleted image to said common member, said transferring done in register superposed on liquid-depleted images previously sequentially transferred in register to said common member;

after a last said liquid-depleted image is transferred in register to said common member so as to form a full color ink-jet-ink-derived image on said common member, transferring said full color ink-jet-ink-derived image to a receiver member to form said completed plural image thereon; and

5 prior to said step of forming primary images, regenerating said operational surfaces to prepare said operational surfaces for receiving a new primary image from said ink jet device.

10 10. (Previously Claim 73) In a digital color imaging apparatus having a plurality of tandemly arranged image forming modules, wherein a plurality of ink-jet-ink-derived images are successively transferred in register to a receiver member, each module including an intermediate member for an ink-jet-ink-derived image to be formed thereon, a method of making a full color ink-jet-ink-derived image comprising the steps of:

15 moving said receiver through said plurality of tandemly arranged image forming modules;

in a module, using an ink jet device to form on an intermediate member a colloidal ink image made of a dispersion of particles having a color;

20 concentrating said particles of said colloidal ink images by applying a field for urging particles having said color to migrate within said colloidal ink image to an operational surface of said intermediate member;

removing a portion of excess liquid from said particles so as to form an ink-jet-ink-derived particulate image having said color;

25 transferring said ink-jet-ink-derived particulate image from said operational surface to said receiver member, said transferring being in register with any ink-jet-ink-derived particulate image having another color previously transferred in register to said receiver member; and

30 moving said receiver member through any remaining of said plurality of sequentially arranged image forming modules so as to form, in a last module, said full color ink-jet-ink-derived image on said receiver member.

11. (Previously 74) In a digital color imaging apparatus having a plurality of tandemly arranged image forming modules, wherein a plurality of ink-jet-ink-derived images are transferred in register to a receiver member, each module including an intermediate member with an ink-jet-ink-derived image
5 being formed thereon, a method of making a full color ink-jet-ink-derived image comprising the steps of:

in a module, using an ink jet device to form on an intermediate member a colloidal ink image made of a dispersion of particles having a color;

concentrating said particles of said colloidal ink image by applying
10 a field for urging particles having said color to migrate within said colloidal ink image to a operational surface of said intermediate member;

removing a portion of an excess liquid from said particles of said color so as to form an ink-jet-ink-derived particulate image having said color;

transferring from said operational surface to a common member
15 said ink-jet-ink-derived particulate image having said color, said transferring being in register with any ink-jet-ink-derived particulate image having another color previously transferred in register to said common member in prior modules of said plurality of tandemly arranged image forming modules; and

when after every said ink-jet-ink-derived particulate image such as
20 required to form a full color plural image has been transferred in register to said common member, said plural image is transferred to said receiver member to create said full color ink-jet-ink-derived particulate image on said receiver member.